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AUTHOR Foster, Sue
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ABSTRACT

Two issues in language development are explored--the emergence of the ability to communicate and the relationship between emerging forms and functions. Solutions to these problems involve the notion of interpretation and depend on the fact that adults interpret children's behaviors as if they were meaningful according to the adult system. The language development of five children between ages 0:1 and 2:6 was investigated. Focus was on these children's emerging ability to converse on different topics in interaction with their mothers. Conclusions are that: (1) children come to communicate because they are interpreted as communicating; (2) for an accurate picture of language development to be achieved, topic types initiated by children must be accounted for; and (3) the emergence of topic types accompanies the emergence of the appropriate communicative behaviors to express these topics. Therefore, in asking whether means of expression or topic type come first, the question of the relationship between emerging forms and functions is raised. A solution to the form/function or expression/topic question points to function preceding form in some cases and form preceding function in others. Adult interpretation of children's communicative behavior is important in both types of development. (JK)

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THE EMERGENCE OF TOPIC TYPE IN CHILDREN UNDER 2;6: A CHICKEN AND EGG PROBLEM

Sue Foster
University of Southern California

In studying children at the preverbal stage and as they progress through to the verbal stage, I have found that the data has forced me to look at two crucial questions in language development, and I want to suggest possible solutions to these two issues in this paper. The first issue has to do with the emergence of the ability to communicate. The second has to do with the relationship between emerging forms and functions during development. This second is the chicken and egg of the title. The solutions to both these questions seem to involve the notion of interpretation--they seem to depend on the fact that adults interpret children's behaviors "as if" they were meaningful according to the adult system (Foster 1981).

Among the things I shall argue are, firstly, that children come to communicate because they are interpreted as communicating; secondly, that in our looking at the emergence of language, we must take account of the types of topics initiated by children if an accurate picture of language development is to be achieved; thirdly, that the emergence of topic types goes hand in hand with the emergence of the appropriate communicative behaviors to express those topics, so that in asking whether means of expression or topic type come first we are raising the question of the relationship between emerging forms and functions. And finally, I will argue that a solution to the form/function or expression/topic question points to function preceding form in some cases, and to form preceding function in others. Also, interpretation by adults of the child's communicative behavior is important in both types of development.

The study was an investigation of the language development of five children aged between 0;1 and 2;6. It focussed on these children's emerging ability to converse on different topics in interaction with their mothers. In this paper, I shall simply define topic as the object of shared concern of mother and child in the interaction.

The children in the study were roughly six months apart in age and ranged from 0;1 to 1;11 at the beginning of the data collecting period, and from 0;7 to 2;6 at the end. All the children and mothers were white, middle-class, and living in Lancaster, N.W.England. Video-taped data of mother-child interactions were collected over a number of days spent with each dyad. The interactions reflected a wide variety of activities including feeding, diaper-changing, bath-time and free-play. Each dyad was studied intensively for a period of three or four days at the beginning and end of the six-month data collecting period, and a total of one hour's video-tape on each pair was collected at each of those times (except from the youngest child at 0;1 when only half-an-hour was collected). So, there is a total of nine & ½ hours of tape, covering ten different ages, from five different children.

Once collected, the data corpus was transcribed using a system of my own devising, which involves the representation of vocal, gaze and movement behaviors, thus allowing systematic analysis of the early communicative behaviors. Discussion of this system can be found in Foster 1980 and 1981. The data included in the present paper is represented in a different form simply because it takes up less space in text and is easier to reproduce. It does not, however, represent the overlapping and cooccurrence of behaviors in as efficient a manner as the original working transcripts.

The focus of the analysis was on those occasions when the child attempted, and succeeded in, changing the object of shared attention with the mother. Topic initiations were defined as: those clusters of behavior which the child uses intentionally to seek to direct or redirect the mother's attention to some new object of shared concern. For a new topic to be successfully established, there has to be, minimally, one initiation, one response and one feedback move. This notion of moves is taken from the work of Sinclair and Coulthard in discourse analysis (Sinclair & Coulthard, 1975) and simply means, when translated into my terms, that a child initiates a topic that is taken up by the mother and the child responds to the mother's response, showing that it was not just an accident that the child initiated the topic. (In some instances an absence of challenge may serve the same function as a response.)

Following Keenan and Schieffelin (1976), I looked for evidence that the children were both getting-attention to themselves as speakers and directing the mother's attention to the new shared object, by providing sufficient information for the mother to identify correctly the child's new interest and what the child wanted to convey about it. These I found, but it is worth mentioning that in most of the data, the children did not perform the attention-getting and attention-directing as separate steps, but simply directed attention to a new topic, and, "accidentally" attracted attention to themselves as speakers. I have argued (Foster 1979) that this has to do with the intimacy of the relationship between mother and child, as well as the the stage of the child's communicative development.

In doing the analysis, the first question/problem raised by the data was that of the intentionality of topic initiations--when are they really strategies? The two extremes seem fairly easy to recognize. The following is an example of a clearly <u>unintentional</u> topic initiation. In this example, the mother's attention is caught by Nicholas' playing with the diaper pins attached to her sweater, but the child's response to the mother talking about the pins is simply to turn his attention to other things:

<u>Nicholas at 0;9</u>

It is Bath-time. Mother has filled the bath. She is supporting Nicholas in a standing position on the floor so that he can look into the bath. Mother is gazing at Nicholas. Nicholas is gazing at the bath.

M. "are you looking in?" + gazing at C.

C. gazes at M's body + manipulates the diaper pins on her sweater.

cont.....

M. "heh? are you go- look look look in the bath"
C. gazes at bath + cont. manipulates pins
M. "goin' to look in?"
C. gazes at M.
M. "heh?" then: gaze away + "no not my {pins" / {gaze at C. + moves C's arm away from pins
C. gazes at bath.

So here a topic initiation seems to have occurred, but it is not established as a topic because the child had no intention to start one. In fact, it is really the mother who starts it, and it fails because the child is not interested. In the following example, on the other hand, the child is clearly intending to communicate that she wants the object--she vocalizes, gazes at it and gestures towards it, as well as checking that her mother is attending to her:

Kate at 1;3

Mother and child are seated at the table for lunch. On the table in front of Kate are food and a vase of flowers. Mother is gazing towards the camera and Kate is gazing ahead at the table.

C. reaches ahead + continues to gaze ahead. Then: gaze at M. + cont. reach + /gæ/
M. "mm that's the flowers"
C. lowers hand

Not all cases are so clear-cut, however. In the next example, the child gazes towards his drink and vocalizes, but he is not using adult gestures, nor does he check his mother's attention as Kate did in the example above. So is this child being deliberately communicative or not?

Russell at 0;11

Mealtime. Mother is gazing at Russell and scraping his mouth with a spoon toremove excess food. Russell is gazing at Mother.

{C. gazes at drink + /ə:::
{M. {spoon away / {+ gazes at bowl gazes at C.+ "another drink"+
C. (cont. gaze at drink + vocalization) + flaps his hands.
M. gives C. a drink

Problems arise in deciding if this child is communicative or not because we know that this child cannot yet monitor his mother's attention while attending to an object, (in Trevarthen and Hubley's terms (1978) "secondary intersubjectivity" has not yet emerged), so are we to say that this child is not intending to communicate because he does not monitor his mother's attention? Or does the lack of adult gestures mean we should say this child is not intending to communicate? The trouble is, older children can, and do, communicate without using adult gestures or checking attention, so it is hard to decide on relevant criteria. For now, I shall simply leave the problem there and pick it up again later.

The second question raised by the data has to do with the relationship between emerging forms and functions. One of the aims of the study was to trace the evolution of communicative behavior across the developmental period. My interest was therefore in all

the communicative behaviors--vocalizations, language, gestures, etc. as they were used in topic initiations. It soon became clear, however, that a simple frequency count of these behaviors would not be satisfactory. It became clear that, at a very early age, children are using behaviors that are appropriate to the type of topic--the type of meaning--they are trying to express. Indeed, they select behaviors that are appropriate to the topic type as soon as they have a choice of topic types available. So, for example, it is no good counting the number of points or reaching gestures in the data, and drawing conclusions about the date of their emergence and their place in the system unless one takes into account whether pointing and reaching are likely to have been used for the kind of thing the child is "talking" about.

At the earliest age studied (0;1) there was no choice. The child I studied (Lauren) had the means only to draw attention to herself by cries and gurgles, and so on, and it didn't even make sense to say that she intended to attract attention with them. During the first year, though, several changes take place. For one thing, children come to attract attention to themselves deliberately, by a variety of cries and actions that they have learned will get their mother's attention. During the first year also, there emerges the ability to use gestures and with it comes the ability to initiate topics about things in the environment. From only being able to initiate topics about themselves (things like hunger and discomfort--that is topics that involve only attention to the child himself and are not related to things in the immediate physical environment) the child moves to a stage where topics can either be about the self or about the environment. A choice emerges , therefore--a choice that involves choosing the behavior appropriate to the topic being expressed.

An example of this newly emerged topic type (the environmental topic) can be seen in the example below, in which Nicholas at 0;9 reaches to his cup to express that he wants it:

Nicholas at 0;9
Mealtime. Child is sitting in his high-chair and Mother has just fed him a spoonful of food. Child is gazing at his high-chair tray and Mother is gazing at Child.
C. gazes at cup + reaches towards the cup
M. drops the spoon she is holding. Then: hand out to cup and gives Nicholas a drink + "another drink" + gaze at C.
C. accepts drink.

The next two examples come from the data from Kate at 1;10. At this age she was, despite her age, still essentially prelinguistc, having a mere handful of idiosyncratic "words". The first is a topic about the self--developmentally the first to emerge:

Kate at 1;10
Mother is off-screen. Kate is kneeling on a chair next to the sink in the kitchen and gazing away.

C. climbing to a standing position + gaze at M. + cries
M. + gazes at sink/down "yes, I'll be with you in a minute Kate love"

The second example--an environmental topic--shows the kind of complexity of expression that is possible using only actions and gestures. Kate manages to convey that she wants her mother to pour water on her higher than she is presently intending; as high, in fact, as she had done before:

Kate at 1;10

Mother has been pouring water over Kate in her bath. She has put down the plastic beaker she has been using, and has encouraged Kate to wash her baby doll.

C. gazes at beaker + /ə/ + leans towards the beaker

{ Then: gaze at M. + /ɛ ə/. Then: { /ə ə/ + lifts beaker to M.
{ M. { "you want mummy to d that again do you?" + takes beaker and raises it

C. reaches towards the beaker + /ɪ: ə æə/

M. "what d'you want this time love?"

C. pulls at beaker + /ə ɐ ɐ::: ə ə /
{ + lifts beaker up high

M. "right up high do you?" + fills beaker with water

{ C. ((laugh/cry))
{ M. { "right up high like that. Is that what you want?"

Then: allows water to fall on Kate

C. /mm:/ + 'catches' the water in her hands

In all these cases, the kind of behavior used is appropriate to the kind of topic being begun. That this is so can easily be demonstrated by imagining what would happen if a child wants an adult to get something for him/her, but makes no motion towards that object, simply crying, for example. Clearly the adult would not have enough information to go on in order to interpret the child's intention correctly. Similarly, if the child gestures towards an object, but with no intention of attracting attention to that object, the adult will simply be distracted by the gesture and again fail to interpret the child correctly. These are hypothetical examples (and I have never seen the frustration on the part of the child that would be the only thing that would tell an adult that such a problem existed) but they serve to demonstrate that there <u>is</u> appropriate behavior for particular topics.

When words appear, a further expansion of choice takes place. With the emergence of symbols that can stand for things present only in memory space, rather than physical space, to use a distinction employed by Keenan and Schieffelin (1976), comes the ability to talk about things abstracted from the here and now of the physical environment. These I shall call <u>abstract</u> topics. Abstract topics include discussion of non-perceptible attributes of physical objects--who they belong to, where they come from, etc. It also includes topics dealing with past and future events, ideas, and counterfactual hypotheses. Putting all such topics into one category <u>is</u> an oversimplification, and any further study with older children would certainly have to involve a more sophisticated taxonomy than one that just calls them all abstract topics. However, for my purposes, this simple categorization is sufficient, since I am here interested only in the major milestones in the emergence of forms and topics.

The data from the oldest child in the study shows that by 2;6, children have acquired all three types of topic--self, environmental and abstract. The data also shows that even though language will eventually be able to express all the topic types, at least at the early linguistic stage, there is still a behavioral difference between the types. For example, in the following example, Ross uses language in his request for some apple, but he also uses gesture as part of the topic initiation of this environmental topic:

Ross at 2;6

Mealtime. Mother and Child are gazing at the tomato Mother is preparing.

M. "I don't like funny tomatoes"
C. gazes at an apple on the table

C. "apple" + gazes at M's hand/tomato + points at apple + other hand grasp out to M. Then: "please apple"

M. + gaze at M. + both hands down gazes at C.

Then: "please" + gazes at apple + reaches to bowl of apples.

In the next example, on the other hand, an abstract topic, there is no gesture--the story is told entirely through language:

Ross at 2;6

Mealtime. Mother gazing at apple in her hand. Child gazing at Mother's food.

C. "sometimes" + manipulates plate
M. gazes at C.
C. Ross /kʌmɔ? b(r)ed b(r)ed kʌmɔ? maɪ /
+ gaze at M. Gaze M's food Gaze M. Gaze plate Gaze M.
Then: gaze plate.
M. "what are you talking about what about the bed at night?"
C. gaze at M. + "m"
M. "what did you say?"
C. gaze at plate. then: /ɪn ə dɔg/ + gaze at M.
M. "in the dark"
C. "Ross /əŋ/ Ross runs in a dark"
+ gaze camera then at M.
M. " run in the dark"
C. "Ross runs"
M. "you get out of the you get out of the bed in the night did you and ran around in the dark"

(Gaze and some of the movement behavior has been included to show that it is not relevant to the content of the story.)

Where do these developments lead us? Firstly, they point quite clearly to the fact that at no time should we simply count communicative behaviors--either prelinguistic or linguistic--without due account being taken of the topics involved. A completely distorted picture of the child's abilities may result if the distribution of topic types within the corpus are not taken into account.

Secondly, there is an important question about development involved in these findings: they raise the question of the relationship between emerging forms and functions--do topics emerge because the forms are there to express them, or do the forms emerge because the

topics that have emerged need them? This is by no means a new question, but I would like to reexamine it in the light of the kind of data I have been looking at, which involves both younger children than are usually objects of such discussion, and behaviors which are not usually reckoned in with the development of language in a systematic fashion--namely gestures, actions and gaze. The result of such investigation is, I think, to show that not only does the form/function question arise at the prelinguistic stage, but also the kind of explanation that can be offered to account for prelinguistic data also works for linguistic data.

The form/function question has been expressed in many ways, but perhaps the most well-known formulation is Dan Slobin's principle "new forms first express old functions, and new functions are first expressed by old forms" (Slobin, 1973). In the remainder of this paper I shall look at this maxim as it applies to the emergence of communication and language, as viewed from the perspective of topic-type development; and suggest that interpretation by adults is the key to those new forms coming to signify new functions.

The second half of Slobin's principle would predict that children have the desire to express new topics (have new functions) in advance of the new means to do so; and there seems to be evidence that this is indeed the case. During the stage of the transition from gestural into linguistic communication, children become very sophisticated in their ability to exploit their non-verbal communicative repertoire, as we have already seen in the example where Kate demands that her mother pour water from a greater height. They also try and express things for which preverbal communication is more obviously inadequate: there are occasions where Kate, for example, seems to be trying to express herself about past events or things not in the here and now. On one occasion, she was asked if she knew where her new toy was. Her response was to turn towards the door of the room in which, her mother's response makes clear, she had previously been playing with it. Similarly, when looking at a picture of a cat in a book, she points to the outside door, to which mother replies: "yes there's a cat outside isn't there sometimes". These are not sophisticated conceptions of abstract topics, but they do show the child to be no longer tied to the immediate environment.

In the transition from non-communicative action to communication, it seems that this cognition preceding communication skill argument will not hold. In the emergence of gestures, it is clear that children have an interest in the environment before they communicate about it, but it is not clear that they have the intention to <u>communicate</u> about things in the environment when this interest first emerges. In fact, the evidence points in the opposite direction: to children using actions that reveal, but were not intended to communicate, their interest in objects. These actions are, however, interpreted "as if" they were communicative, by adults, and this, I argue, is the mechanism by which they become communicative--the child has reflected back to him/her the symbolic value of the actions he/she performs. Reaching, for example, emerges out of a simple functional action designed to grasp an object that is at a distance, initially with no intention of

expressing "I want", but the adult, seeing what is an accepted gesture, meaning that, interprets it as if it did. I have argued elsewhere that the emergence of other gestures can be accounted for in the same way (Foster 1981).

In these cases, therefore, there seem to be forms that are acquired in advance of the adult functions they come to serve. There is, therefore a period when the child is gradually coming to understand the meaning of what he/she is already doing, and it is this period which poses such a problem for researchers--when intention is so hard to gauge. It is hard precisely because children may not be using actions with the intentions adult perceive in them.

A similar period, during which forms seem to be used without full understanding of their meaning, can be seen during the development of language. Indeed it seems to be a characteristic of more than just early development (Bowerman, this volume). From the emergence of the first words which are not clearly truly symbolic, but rather are as much part of the object or event they describe as other features, through to the acquisition of complex strings in context (cf. Wong Fillmore 1976 on seoond language acquisition), children seem to pick up adult forms before they can truly control them. Moreover, it seems reasonable to assume that they eventually come to have the adult functions primarily because adult's treat them as if they already did, i.e. through interpretation. Here, then, is specifically linguistic development in advance of cognitive development. From the child's perspective, this is the other half of Slobin's maxim: "new forms first express old functions" ; because we must assume that the child does not simply produce strings of speech for no good reason, he/she presumably talks in a way he/she believes conveys his/her intention--serves the functions already possessed.

So it seems we need Slobin's formula + interpretation to account for the hand in hand development of forms and functions, or, in the terms of this paper, topic type and communicative behavior appropriate to that topic type. Interpretation needs to be there to account for the development of communication in the first place, the emergence of gestures from functional actions and the emergence of more complex functions and forms at the later stages. Some developments seem to be better described, or accounted for, by saying the child has functions in advance of forms and others by saying he/she has forms in advance of functions. While we must wait upon further research, preliminary findings from this observational data suggests that the solution to the problem posed in the title of this paper sometimes involves the chicken coming first and sometimes the egg!

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